REVIEWS.

ART. XIV.—*Elements of Pathological Anatomy.* By SAMUEL D. GROSS, M. D., Professor of Surgery in Jefferson Medical College, &c. Third edition, modified and thoroughly revised. Illustrated by 342 engravings on wood. Blanchard & Lea: Philad. 1857. 8vo. pp. 771.

THIS book may be considered as a representative work. It marks the level of the anatomical school, being just such a book on pathological anatomy as an intelligent surgeon of large experience might be expected to write. This understood, nobody, who begins with the title page and reads perseveringly, need be disappointed. The reader, who confidingly accepts the guidance of Dr. Gross, will be conscientiously led over the whole *surface* of the domain justly belonging to pathology, and will find the way very pleasantly beguiled by clear and simple descriptions. Measurements will be given with scrupulous exactitude—and the hues of all objects that have colour will be noted down to the most delicate shade. He will learn the feel and the smell of everything which can come within reach of his digits and nose. He may gain a complete acquaintance with the whole outside of pathological anatomy by means of Dr. Gross's introduction; but, after all, it is as incomplete and unsatisfactory as to attempt to know a man by looking through the windows of his dwelling.

How anatomy may be studied, and how anatomy should be taught, are general questions of no little practical weight, and we propose—since we have so little reason to find fault with the facts contained in the book before us, which are really inexhaustible in amount and stated with admirable clearness and simplicity in most cases—to draw the reader's attention to the errors of philosophic method which belong to this, in common with a large class of treatises on pathological anatomy. It is of no avail to sneer at medical philosophy, or to assert that there is nothing to represent it but pretentious folly. Every medical man has a medical philosophy which is rooted in the groundwork of his nature—close by his politics and his religion. And every medical book represents in some sense, a phase of medical philosophy.

All the systems of anatomy, and all the individual students of anatomy, divide themselves by a natural repulsion, into the two classes which represent with more or less exactitude, the modes by which almost all the subjects of human observation and speculation may be approached. There is an esoteric and an exoteric phase for all matters of sight and subjects of faith. Philosophers, theologians, poets, social reformers, mathematicians, painters, music-makers, as well as anatomists, classify themselves on this basis. Thus we find Serres, Oken, Owen, Paget, De Blainville, Robin, and Bouchut standing *vis-à-vis* to Kölliker, Lehmann, Quain, Carswell, and Gross; Locke stands *versus* Schlegel and Comte; Malthus against Coleridge; Tennyson and Keats against Scott and Campbell; Edwards against Fenelon; Louis Napoleon against Prudhon; Ruskin against Joshua Reynolds; Bellini against Wagner, and Prof. Pierce against Merriam.

Had all these men studied medicine, it were easy to conceive from what point of view each one would have looked at life, health, and disease. Looking closely at these disputants we should see, on the one hand, the Anatomists, *pur sang*, who work from without inward; from the particular *towards* the general; from the material form towards the *insaisissable;* from special organs towards developmental principles—but without attaining so far, as a matter of course. Most of them fall short in the pursuit and lose sight of the end of biological investigation. "How hard it is to compass the means by which one mounts to the fountain head; and before he has got half way, a poor devil must probably die!" said the wearied student who began at the wrong end of the tangled thread. Anatomists may travel all over the palpable and the sensible with great assiduity and keenness of vision, and with "best luck catch only a fox." But they go with knowledge and safety as far as they go—taking care to affix one end of their telegraphic wire to a rocky fact on shore, before starting off into the deep with the other. This class is well represented in our Young America School, and is unquestionably on the right course; we would only ask of it, to look a little deeper through solidism and humoralism till it arrive at the apprehension of the dynamics as well as the statics of life.

Among the Vitalists are men of broader view and deeper ken—men who possess capacity for large generalization. But most of them overleap and outrun the slow rolling ball made up by toilsome investigation, and playfully knock about hypotheses like snow-flakes. For Stahl, Boerhaave, and the school of Montpellier, the study of pathological anatomy could have but little interest. They do not need pegs to hang their theories on, for most of them are lighter than air, and keep quite out of sight. The men of this class are, for the most part, unsafe practitioners of medicine, having an unequivocal leaning towards mediæval therapeutics; yet they are clinging to a great truth, while plodding near-sighted skeptics are scratching the earth's surface in quest of the Νομος, and measuring cranial bumps to gauge the divinity that has its throne inside. They have apprehended a great underlying fact, but they forget that vital force is not an entity, but only a "special property" of organic structures.

Out of the midst of these is developing the new school. Its basis is broad and its aim is high. These thinkers have found out that there can no more be an absolute solidism, than an absolute vitalism, and there can no more be either of these than matter without spirit, or spirit without matter—the power without the deed. Thus escaping the "coarse hypotheses of materialism, and the absurd logic of immaterialists," they are promulgating the doctrines of modern *Organo-Vitalism.*" of which De Blainville, Robin, Bouchut, and Littré are the ablest exponents. They talk rather of general than of local disease—of idiosyncrasies, inheritance, types, diatheses and morbid elements more than of the numerical force of so many cases collected, or of the colour, size, weight, and consistence of hepatized structures.

These are not differences without consequence—they are of primal importance. But we should not dwell upon them at this time if we did not, in the book under consideration, see practical errors directly traceable to what we believe to be faults of philosophy—and, not only in this book, but in all the libraries and in all the lecture-rooms the lookers from within face the lookers from without. What coincidence of opinion can there be when the first principles fly apart to the two poles. Let us look at it in the common questions of the time. To one mind, puerperal fever appears simply as the result of uterine phlebitis, or peritonitis, or inflammation somewhere else about the womb, or its appendages. While to another, puerperal fever is plainly an example of blood-poisoning, manifesting itself in the particular locality which it selects through the accidental circumstances of the patient's child-bed condition. For this observer it is as much a case of blood-poisoning as is scarlatina with its local excitements and exudations, or hospital erysipelas.

Again, pneumonia appears to one to be simply an inflammation of the lung—and, since inflammation is a unit—a uniform, well-defined, and invariable condition appertaining to all organs and tissues—as a matter of course, inflammation of the lung does not differ in essence or phenomena from inflammation of the subcutaneous tissue produced by a foreign body. While on the contrary, the same pneumonia is regarded by the deeper searching eye as a general disease. It may have arisen from a local irritation—as from the absorption of some morbific material—(but if in this way local, the primitive effects are not with any certainty to be found in the lungs); but, when fairly germinated, it is an essentially general disease, manifesting itself by various phenomena, among which are pulmonary softening, with an afflux of blood; exudation of serum and fibrin; new formations of cells and globules, and the retention of chlorides which should have been eliminated with other urinary elements. The heat of skin and purple flush of cheek are not results necessarily of the impairment of respiratory function. Still further to illustrate this point, let us select an *erysipelatous cynanche;* to one, it appears as nothing more than a sore throat, and is treated as such, notwithstanding the preceding chill, headache, and pains throughout the limbs. Another, to whose mind the succeeding blush over a square inch of mucous surface seems an inadequate cause for a preceding *malaise*, looks upon the quinsy as the counterpart of the rose spots of typhoid, the herpes of catarrh, and the semilunar whorls of measles.

We think it of the first importance that teachers should impress upon their pupils a sound, approximately sound, philosophy. There have been many who have affected a disgust for all hypotheses and philosophies of medicine. Thus raising the old question of the Dogmatists and the Empirics, who were debating in the time of Celsus, and have not yet settled the dispute between them, whether there can be a speculative medicine, and whether all the accepted facts and ideas of medical science were or were not based upon empiricism. This oscillating point has not yet been fixed, nor has such a consummation been possible till the late advances in general natural history, had established certain bases, from which a science could be constructed from the known towards the unknown. To-day, says an enthusiast, we may boast that we have the knowledge of a speculative system of medicine, and it has been every day of these last years developing itself before our eyes by means of investigations which more and more demonstrate the relations of pathology to biology. All the facts and recognized principles of pathological anatomy are based upon general anatomy, just as those of pathology rest upon general physiology. Thus medicine, the medicine of the future, is fast coming to that state of promise when its foundations shall be as sure as those of the science of life; and the reproach uttered by Cruveilhier acknowledged to be undeserved, for it will no longer be true, that *il n'y a d'autre calcul possible que le calcul des probabilités.* The most hopeful would undoubtedly confess, however, that many questions presented to the student of medicine must, from their very nature, forever remain without positive solution.

As there are different ways of practising medicine, so are there various modes of studying the science, which is the living spirit of the art. When we give advice, we say: at the beginning let every one seek out and take to himself a stock of *good definitions.* Many a man goes the wrong way on account of a bad definition working in his head, and quite as many go without persistence or certainty, because they have no definitions and never had any, and have never found out that they wanted any. A beloved preceptor, ever to be remembered with reverence, was accustomed to say, when you get a new book, read the *Preface* and pick out all the plums of definitions, for they give the flavour. When you have the definitions look for the classification, and then you have hold of your man, and you know at once whether you can get on together, and if it will be of any use to seek a more familiar acquaintance.' But avoid the mistake of Pinel, who, while he believed justly in a good classification and thought that a correct nomenclature would accomplish the perfecting of medicine, was not careful of his facts, but, as Louis asserts, trusted to his young pupils for the collection of them. Whether the proposition, *la médecine est tout entière dans l'observation*, be accepted or not, the following one is indisputable: *L'incertitude des connaissances médicales tient à la fois à une observation imparfaite des faits particuliers, et à la manière non moins imparfaite dont ceux-ci sont étudiés.*—(Louis, *Mém. de la Soc. Méd. d' Observation.*)

We ask, then, at the start, for good definitions. Those who write books on pathological anatomy must expect to be catechized on first principles. The student comes up and he wants to know, he persists; and so we interrogate the teachers. We ask them, before we care to hear about the effects of the dead man, what is *life*, and what is *death*, and what are *health* and *disease?* It can be seen at first glance that this departed person has gone off and left his cadaver with, perhaps, a tumour on it about the size of a cocoa-nut, and of the consistence of white-oak cheese. But that does not tell us the half; and is, in truth, a very useless piece of intelligence if we do not associate with it an immense amount of other intelligence. The tumour is not the disease, nor does it tell much about its antecedents, nor does it more than hint at all the consequents of the disease. But this is such a palpable truism that one need not utter it if it were not also just as true that most books on pathological anatomy are deficient in that *amount of other intelligence* which everybody sees is essential and needed, but which nobody, in the ranks of the *pure and simple pathological anatomists*, seeks to supply. To look at that man's cadaver and his cheesy tumour with persevering penetration will not enable us to persuade the next man not to leave his cadaver in the same way. We fear there has been a fearful waste of material in this cutting up business. Cutting up must be done. There can be no getting at the truth in a cytoblast without cutting up. But let it be done with the expectation of finding only the coarse and *altered* illustration of a small part of the complex processes which preceded death. Some teachers of pathological anatomy have wofully misled their pupils by pictures of disease, which have only the outlines of morbid specimens for their frames. There is a science of diseased anatomy which is a part of the foundation-structure of medicine, but its investigations are commenced upon the living body. Many acknowledge this in the abstract who write as if they never thought of it. In fact, the scholastic style of the lecture-room is not a whit better. So that the student, who does not have the chance to change off at the clinique his second-hand stock of notions obtained from the anatomical pathologists of the college, gets a wrong start in life. He may gaze at highly-coloured plates, and bad smelling specimens in transparent jars, and think he sees there the inheritance which falls to all flesh, disease itself, body and spirit. So that he secure the pearl what matter how the oyster sickened! He starts up, and hunts out quantities of monstrous specimens and rarities, and does not find out that they may be worth to him no more than so many coffins, till the granting of a license to practice medicine lets him down to the clinical common places, which pathological anatomists, by profession, have either ignored or shown to him through a darkened glass, darkly enough. He has groped "with greedy hand for treasures, and exults at finding earth worms." Instead of the animated nature, he has, like Faust, "naught around him but beasts' skeletons and dead men's bones in smoke and mould."

These anatomists are like some numismatologists. One man finds pleasure in collecting, polishing, and arranging all the medals of all the ages. But though he should find them all, and know them all by sight, and call them all by name, put each one into its own place; though he should measure, and weigh, and value, and burnish all the coins of every die, they might be of no more worth to him than so much brass. Let him read dates and inscriptions with all pedantry, his cabinet would be only a junk-shop, if each little medal did not teach him whole chapters of history, facts, and philosophy, poetry, and the arts of war, designing, engraving, die-sinking, in a word, the genius of the people whose signum it has been.

What a pity that dead men tell no tales. Hollow skulls are supposed to have said something to St. Jerome, and to Oken and Owen, but, in some company, they are as silent as they are sightless. An anatomist has a skeleton in the house, and a vitalist is overrun with spirits. Each of them has effected λύσις καὶ χωρισμος ψυχῆς ἀπὸ σωμὰτος, but neither has a *man*.

The basic-idea or philosophy of Dr. Gross's *Elements of Pathological Anatomy*, is plainly enough indicated by the following passages which we pick out from their contexts, and expose as independent propositions:—

I. "*All organic diseases, whatever be their seat or extent, are the result of inflammatory action.*"

II. "*Every inflammation, irritative or morbid action, is originally of a local nature.*"

III. "*It may be doubted whether under any circumstances there can, strictly speaking, be a functional disease without some change in the anatomical elements of the part.*"

It is our purpose to present a detailed exposition of these axioms as they have been applied by Dr. Gross to the different organic lesions and elements of disease in their author's own words, and in accordance with his arrangement, as far as is possible. The plan of his book consists in the consideration of the general principles of pathological anatomy, including inflammation, transformations, tubercle, cancer, &c., occupying the first two hundred pages; followed by a very full and satisfactory application of these principles to all the organs and tissues, beginning with the blood and proceeding from the cellular tissue through the muscles, bones, &c., of the adult to the placenta of the fœtus.

The completeness of this work, as regards the subjects treated, is especially admirable. But, *en revanche*, many subjects are necessarily slurred, and some but dimly hinted at. It is, in short, as encyclopædic as the lectures of a practised, popular, and fluent professor of surgery are likely to be. It is like reading a dictionary or gazetteer. The time has gone by when one man can be competent, or live long enough to travel all over the medical cosmos and describe its wonders in one volume, even though the book pretend only to treat of elements. By elements should be understood first principles—and not a catalogue *résumé* of the titles in brief of all the remarkable facts and phenomena that ever were heard of. We might as well expect to enjoy the scenery of a country by reading a conveyancer's abstracts of titles to its real estate, as to find substantial profit in such compact enumerations of anatomical splendors.

The book is opened with a short and general review of the facts of normal anatomy. These opening paragraphs, brief as they are, we find to be characteristic; being shaded by a dark hue of materialistic, or rather mechanico-organic morbid anatomy, which we enter protest against here in advance.

The human body (chap. i. p. 33) is composed of solids and fluids. Of the fluids the blood is the most important, although Dr. Gross does "not feel disposed to attach that great importance to it which the advocates of the old humoral pathology did." The solids consist of tissues, which, combined in various ways, constitute the organs, whether parenchymatous, *pulpy*(!), glandular, or erectile.

Connected together by vessels and nerves, as well as, *in some instances, by continuity of surface*, there subsists between the various parts of the body, the closest *fellow-feeling*. After allusion to various examples of "sympathy," our author continues: "I have thus briefly adverted to the relationship subsisting between the principal organs of the body, and endeavoured to account for it upon *anatomical* principles." One might as well attempt to explain on known anatomical principles the contractions of the uterus after nine months' gestation, or the evolution from a Graafian vesicle once in four weeks. No hint is here given of an incipient conception of the idea of an unseen pervading power or property, which makes of a community of molecules, of myriads of active agents, having a certain independence, a single larger being of a compound and complex organization. But as the author doubts whether the discussion of this subject (sympathy) would result in good, we proceed, objecting here only to the *dictum* which he throws in as a plea for evading the question. He says: "What is most worth knowing is soonest learned and least subject to dispute." Then have nurses and practitioners of the *routine* school the advantage over those who practise experimental physiology, and study the general laws of life. The statement would not be seriously noticed, if it were not apparent throughout his book, that Dr. Gross attaches an exaggerated importance to the outside and measurable characters of morbid specimens, and undervalues to the same degree, or ignores the subtle impalpable psychological influences which really give the character to a particular disease. Do not the anatomical characteristics of a local manifestation of disease vary with its diathetic character? Are ordinary pneumonia, an inflammation of the lung from a fractured rib, and an inflammation of the lung preceding a manifestation of gout in the limbs, to be described as identical? Taking a step backward, let us inquire with Dr. G. "what constitutes disease, for everybody knows what is meant by health"—excepting those, we may interpolate, who agree with Vogel, that *"il n'y a pas d'organisme humain qui offre l'ideal de la santé dans toute sa perfection."* * * * * (*Jourdan's Trans.*) Disease may be defined to be a departure from the sound state, whether this departure consists simply in a derangement of function or structures." [That is brief and clear.] "So long as the solid and fluid materials of the body act in concert, health must be the result, but *when the blood and the tissues are arrayed as it were against each other, there is disease.*" We have heard of disturbances of molecular attraction, and perversion of nutrition, but the latter part of this definition bears more resemblance to the following, taken from a recent work on General

Pathology. "Disease is a common accident, appertaining to the organization, which, like the words *life* and *health*, is altogether indefinable."

We are curious in matters of definition, and enjoy a good one; we shall put this in our collection. From a recent work on Pathology we extract the following definitions *de la maladie*, as illustrating the philosophies of medicine that have had sway, and the oscillations of the sacred faith from the vitalism of Sauvages, in whose eyes a malady was the "reaction of the interior *vital principle* against deleterious agents," to Buffalini's materialism, which held disease to be a "change in the material condition of the body."

Thus we have at hand an epitome of the history of medicine, from Van Helmont, who saw in *disease* only the results of disturbances occasioned by the grand *Archœus* (a puissant dignitary who held court-chambers, in the neighbourhood of the cardiac orifice of the stomach) all the way down through the ages to that dreadful field where the tissues find themselves pitted against each other in bloody array. [Gross, p. 36.] But in our retreat to quieter times, we learn that Hippocrates considered disease to be the sum of phenomena, resulting from the reaction of the *conservative principle* of the organism against an impression of evil or injury.

Stahl was of the same opinion, for he defined disease to be an effort of the *anima* to re-establish an equilibrium of the normal functions, and to expel injurious agents.

Sylvius de Libaë, professor at Leyden about 1650, told his pupils that disease was a simple lesion of the functions of the living body.

Sydenham believed disease to be an effort of nature, set up for the patient's relief, and the destruction of morbific matters.

Frederic Hoffmann (Halle, 1660 to 1742) called maladies efforts or struggles with death—*conatus moriendi.*

Brown, the man of "*Excitability*" (1736 to 1788), thought that disease should be treated as a "painful, difficult, or irregular exercise of one or more functions."

Reil, J. C., Professor at Berlin (1759 to 1813), regarded disease as a "peculiar action of the organization which replaced ordinary operations when disturbed by unusual circumstances, by an operation altogether new."

Broussais' famous dictum was to the effect that disease was nothing but the effect of functional irregularities.

Cayol taught that disease was a *function*, destined to react against disturbing causes and the destruction of the living body.

Dubois d'Amiens (Sec. Perpetuel de l'Académie de Médecine) proclaims that maladies are lesions of innervation which produce secondary organic or structural lesions.

We have thus founded a formidable opposition to the doctrines of the material localization of diseases, whose advocates, however, make a fair show of hands, stretching from the earliest times to this present day.

Asclepiades (about B.C. 70) heads the list, with the doctrine that disease is an unnatural state produced by the irregular *motion* of the *atoms.*

Themison found in all maladies only tension or relaxation of the *fibres* of the body.

Galen, with a sharp insight, but inconsistent rhetoric, endeavored to explain how disease had its point of departure in a structural lesion, although no disease could really be said to exist except in a lesion of function.

For another, "disease is a peculiar state of the body resulting from a superabundance or from a deficiency in the *quantity of fluids*, or some change in their relative proportions."

Frederic Hoffman described disease as being a disproportion or irregularity in the natural order of movements, whether general or partial.

Among the aphorisms of Boerhaave we find this: Disease is a structural change which deranges the vital, natural and animal functions.

From Fernel we learn that disease is an alteration of the blood, humors, or spirits, which occasions structural changes.

It may justly be said that these definitions render no account of the numerous *dynamic* maladies which present no demonstrable alteration of structure or modification of fluids.

The following are representatives of the compromising *organo-vitalistic* doctrines which include in their definitions both *the dynamic elements and the material elements of the organization.*

Gaubius, of Heidelberg, 1768, taught that "*disease* was a condition of the living body, which prevented the exercise of those functions which were proper to a state of health."

Chomel covers broad ground when he says *la maladie est une altération notable survenue, soit dans les dispositions materielles des solides ou des liquides, soit dans l'exercise d'une ou plusieurs fonctions.*

Andral describes disease as an alteration of the constituent parts of the body and of the functions appropriate to them.

Bouchut defines with brevity, "diseases are transformed impressions." A disease is then a disorder of the forces and of the parts of the body, and of the functions local or general.

As a knowledge of disease implies a knowledge of health, so Pathology implies a knowledge of Physiology and Pathological Anatomy, which treats of all the disorders of which the organization is susceptible, from the immediate principles to the organism considered in its indivisible totality, and involves an acquaintance not only with (*a*) Anatomy, (*b*) Physiology, but also with (*c*) the science of *Media*, or the external agents which surround the body, and influence its functions—

> Wer sie nicht kennte
> *Die elemente*
> Ihre kraft
> Und Eigenschaft,
> Wäre kein meister
> Ueber die Geister.

To gain the knowledge of the earth, one man walks all over its surface, and another bores Artesian wells; but when they have done they must both go to the dog-star to find out the secret of this little ganglion of the universal solar plexus—they must study through the great and little world. Some one has said, "For the phenomena of life, we want the whole concourse of nature." The pathologist, who only interrogates death for what can be learned concerning *life*, must be prepared to range over the whole circle of the sciences. What is life? Says one, "Life is the sum of the functions by which death is resisted." The metaphysician sees in life "the result of organization." For another mind, life is the principle of individuation.

The definition accepted by the school whose characteristic views we are endeavouring to represent, is the one proposed by De Blainville, as follows: "*Life is the twofold internal movement of composition and decomposition, at once general and continuous.*"

"This," says Comte, "is the only definition capable of fulfilling all the multifarious conditions required. It presents the exact enunciation of the sole phenomenon rigorously common to the *ensemble* of living beings considered in all their constituent parts, and in all their modes of vitality.

A man, sick or well—which qualities are only relative—is to be considered with regard to his *static* and his *dynamic* condition; all his organs, all their actions or properties, and all the media which surround and affect him, are to be known.

The English school was at one time looking at this matter of "the surroundings," as those who remember Connelly's lectures in London must be aware. But the microscope has now made everybody near-sighted, and in setting them at little things, has let them forget the greater. But that is not the fault of the microscope, as it is not a fair charge against the speculum that men endeavour through it to cure a general disorder by the topical application of the solid stick.

What, in life, is disease? It is not merely organo-pathic states, which can be materially appreciated by the senses—but these and something more; these are material effects, or rather a part of the chain whose beginning attaches to a primal disturbance of the forces which preside over the growth and development of individual anatomical elements, and binds them into a complex unit.

The assertion of Agassiz is undoubtedly true, that the most complicated combinations of structure and adaptations can be rendered independent of the physical conditions which surround them; but it is also true that in their progress towards a state of toleration of their new circumstances, especially if the change be sudden, they are likely to present temporary manifestations of disease. It is curious to note here the illustration to the statement that Pathology is following in the footsteps of Anatomy, but afar off—so far behind, indeed, that the latter has forsaken a stand-point just as the former arrives on the ground. Thus Agassiz (*Contributions to Nat. Hist. of the U. S.*, vol. i.) announces that to assert the dependence of structural peculiarity upon climatological conditions is an unsound dogma, just at the time when pathologists are beginning to question the *media* with more rigorous severity as being among the chief causative elements of disease.

Pathological Anatomy cannot be separated from Pathology, and Dr. Gross has not succeeded in divorcing their union, though he seems to have tried with intermittence. Pathological Anatomy, in the narrow and limited sense in which it is taken by some writers, is rather a subject for iconographic representation than for verbal description.

Following our author, we come now to the consideration of the chief of all the morbid actions, *inflammation.* We call this the chief, as does Dr. G., but it seems to be implied, in some parts of the book, that inflammatory action is the only morbific action; that inflammation is, in fact, the only disease.

This opinion differs so entirely from our own, that we would prefer to expunge the word altogether from the medical glossary, or limit it within the bounds to which *fever* and *irritation* have been reduced. If inflammation means everything, it describes nothing; and is of no more utility as a means of *defining* a state or result, than is the word *disease.*

The difficulties of expressing a correct definition of inflammation are recognized by all recent writers, and specially noted by those who use the word with restrictions. But neither *stasis* nor *hyperæmia*—words suggested as synonymous with inflammation—express all the phenomena belonging to that complex disturbance of functions, and alteration of structure, recognized as inflammatory. As we have said, we do not like the word inflammation, and would be glad to find good substitutes for it; but there are very many objections to pulling out a word so firmly fixed as that has become. We do not like it, because it is suggestive of a uniformity and identity of processes and results in connection with phenomena which have no common essentials. Wherever it is possible, let there be used specific phrases which indicate with more exactitude the particular constitutional or general element—as whether (*a*) inherited or acquired; (*b*) its dyscrasic character—scorbutic, syphilitic, scarlatinal; (c) the locality; (*d*) the results—as exudations, softening; (*e*) associated disturbances of function.

It is not proven, nor is it probable, that a phlegmasic process arising from an internal cause, bears any resemblance to an *inflammation* produced artificially. A drop of cantharides and a tadpole's tail cannot, by any possible conjunction, enlighten us on the subject of mumps, lung-fever, or boils. Everybody agrees to that, even those who go on in the classical way, talking about redness, heat, pain, and swelling. The reformation of nomenclature will lead to more truthful and exact notions of the phenomena if expressed in scientific terms of definition. For some maladies and classes of disease, the change has been already effected. Thus, we do not lump together herpes, pemphigus, psoriasis, and porrigo. The ignorance or carelessness of designating a *squamous syphilide* with so little nicety as to call it an inflammation of the skin, would be considered quite inexcusable; but no more nicety is shown in the designation of the great majority of similar internal manifestations of disease which are all called by the generic name inflammations. What essential resemblance is there between gonorrhœa and bronchitis? The indetectible poison of the one and the butyrates of the other, are alike overlooked by those who see in these diseases only examples of common inflammation of mucous membrane. A gouty enlargement of a great toe, and a whitlow of a finger phalanx might, without inconsistency, be regarded by some pathological anatomists as effects of identical processes; but in real differential characteristics they are as far apart as are the two extremities of the body. The whole of rickets is not told in Virchow's masterly description of softening bones; dysentery is not merely an inflammation of the lower bowel; cholera infantum is more than an inflammation of glandules in the small intestines; and just as epidemic catarrh is more than an inflammation of the faucial and bronchial mucous membranes, and typhoid fever more than inflammation of Peyer's patches, so is intermittent fever more than inflammation of the spleen, and the cerebral disturbances of scarlet fever more than intra-cranial inflammation. Everybody says amen—but in everybody's books these simple truisms do not appear with the emphatic distinctness which they might claim; and by such faults of omission and commission of the treatises which should give sound principles, and ready method rules for the prompt and intelligent treatment of the sick, but do not give them—by such faults, the student finds his unsound principles as much in his way when he comes to sit down at a bedside, as a long broadsword would be.

It is because we are ill satisfied with the imperfect teachings, and fear the dangerous errors of classical morbid anatomy, that we do not share Dr. Gross's regret that in the forty-five medical colleges of the United States, there are but few chairs of Pathological Anatomy; and we certainly cannot regard this destitution of our schools as attributable to a "strange and culpable oversight." Let us have all the Professors of the Theory and Practice of Medicine which the number of students in each college may warrant—and as no one man can have time, strength, capacity or cultivation to teach the whole science well, let there be special teachers of special branches; and let each one begin at the ultimates, and make a complete development from the radicles of physics to the efflorescence of vitalistic speculations.

Some of the best expositions of Pathological Anatomy extant are contained in clinical lectures on special subjects; and this is the way we desire to have medicine taught, with its anatomy, pathology, and therapeutics of special diseases simultaneously presented.

The lectures on special subjects in the hospitals of our large cities do more good to advance Pathological Anatomy than chairs of Pathological Anatomy or systematic treatises are likely to, for the reason that the former approach the subject from the right direction.

Towards the removal of erroneous and imperfect notions of morbid processes, much progress would be made by a *reformation of nomenclature.* Very simple terms may be used. In these anti-classical times it is not worth while to dig with Piorry too deeply for Greek roots. Let there be, as far as possible, a plain statement of the organic changes and vitalistic disturbances. For *inflammation,* substitute in most cases the word *disease,* and express, after the various localities have been mentioned, the specific process, whether simple or complex, as exudation of lymph or serum, &c.; with the qualification then of the peculiar dyscrasic condition, as scorbutic, diphtheritic, scrofulous, and their mutual relation to the derangements, as primary or secondary. We shall have, in most cases, not only a plain scientific designation of the morbid processes, but also such a full description of the case contained in the enumeration of the elements of the disease that very little more need be added in reporting cases to render them fit to be tabulated. "We may learn the essence from the name."

The following case may illustrate the design of these remarks.

A middle-aged lady, with a solid ovarian tumour of many years' growth, had a chill when resting by an open window after a brisk walk. She considered herself in full health at the time, and was so in appearance. She had the same day pain in the abdomen, followed by constipation, which lasted eleven days; then a low form of fever for six weeks without disturbance of the bowels, and without any marked symptoms except watchfulness; then repeated chills, or chilliness with imperfect reaction for two weeks; a cough for two days; dulness on percussion of right side and entire absence of respiratory sound for one day, at the end of which abundant sweating, failure of pulse, and death.

Post mortem examination revealed superficial layer of fat, thick; bed-sores partially healed; right side of the thorax full of water, clear, without flocculi; pleural surfaces clear, shining, smooth, without redness or adhesion; no vestiges of false membrane anywhere; every other part of the body healthy in appearance except pelvis and lower part of abdomen; here was a tumour weighing ten pounds, twisted on its ligamental attachments, so that its veins were compressed and its surface mottled with distended vessels. A knuckle of intestine had been compressed by false bands, but had got loose. There were no signs of secondary exudative processes about this tumour, excepting for the space of one inch in a large vein on its surface, where there was a red coagulum with thick creamy looking fluid. From the Fallopian tube of that side a little muco-purulent fluid oozed out.

What was the disease, and how to express it? Ovarian tumour; arrested transpiration of skin; disturbance of bowels; strangulation of intestine; hyperæmia of tumour; suppurative disease of vein; pyæmia; hydrothorax—this enumeration is needed to give a name, but its titles, like those of some other things, include all there is of it. It is interesting to notice that one of the obvious and striking phenomena here for the anatomist, viz., dropsy of the chest, did not occur till within the last two days, and was not accompanied at the time of the examination by either redness, loss of polish, or fibrinous exudation of the serous surface. The classical signs were wanting, excepting hydrothorax, and this, according to Laennec and Forbes, if it were not an inflammatory production, was indeed a rarity. There are many cases in which, as in this just described, there are several associated phenomena, primary or secondary, which pathological anatomy should make note of, if it can offer no explanation of the alliance. For example, the spanæmia, hysteria, and disease of glandules of fauces associated with induration and ulceration of the os uteri. If it cannot explain or does not try to explain the association of redness of the eyelids with spermatorrhœa; the occurrence of itching of the nares from intemperate coitus, or the occasional dependence of intercostal submammary pain upon tobacco poisoning, and scores of acknowledged but unseen bonds of union, it must be warned not to promulgate such false principles concerning the uniform character of inflammation and the universality of its presence at the bottom of all morbific actions, as to mislead in regard to the diagnosis of such consociations and their consequent treatment. It must not by any representation concerning inflammation teach us to treat a rheumatic disease of the eye as if it were catarrhal. Nobody means with deliberation, to face out blundering of that sort, but such instructions are sometimes given unwittingly, and rather by implication than by downright statements to the same effect.

* * * *

But to proceed, under our author's guidance. In the general exposition of inflammation, Dr. Gross makes a very clear and comprehensive statement of most that is known to be "real and substantial" in regard to the progress, intensity and mode of termination of this disease. Under the head of Etiology, the modifications associated with temperament, age, sex, habit, climate and season are considered as well as the specific characters in relation to the textures affected, and the predisposing cause.

Under the head of *Phenomena and Nature of Inflammation* the signs usually enumerated as marking inflammation—discoloration, heat, pain and swelling are mentioned at some length, and Dr. G. remarks that "they are not always present, nor are they the only circumstances which occur in inflammation in this disease: [what disease?] in every case there is a perversion of the vital actions attended with an altered state of the nutritive and secretory functions:" and our author continues, "if we regard these four phenomena as essential to the process there can be but few inflammations." We must therefore invoke other names, such as *irritation* and *fever*. But Dr. G. objects to these words because "they do not describe the peculiar conditions of the nervous and vascular systems. Yet men continue to talk about irritation as if they had the most perfect knowledge of its seat," &c. If he had included inflammation in this indictment it would have been no injury to the cause of justice.

In speaking of *temperature* reference is made to certain experiments of Huber, Dunglison, Everard Home and Hunter, tending to demonstrate that the temperature of an inflamed structure is higher than that of the blood. But no reference is made to Bernard's experiments or Brown-Séquard's statements. When speaking of pain Dr. G. says: "The degree of *suffering evinced by the mucous membranes*(!) in a state of inflammation is subject to much variety, which may be perhaps explained by the fact that while some portions are supplied by the ganglionic system, other parts derive their nervous filaments chiefly from the cerebro-spinal axis." Many examples are given of "perverted vital action" and altered function, which are well enough put; but we should like to ask if those who have followed our author do not find enough, in addition to the evidence which the preceding descriptions furnish, to convict this inflammation of false pretences and have him banished forever—for he is indeed a bad fellow—a consumer of nutrient substances, and an incendiary. But he pretends to light fires for household economic purposes—to cook, to prepare nutritious materials, to heat glue for adhesion, and generally to repair damages. He deserves no such credit: there is a great amount of reparation going on without his assistance. The fact is, whatever he undertakes to do he damages. But, on the other hand, he is not to be made a scapegoat of. There is a deal of mischief done when he is not by.

In considering the seat of inflammations, the state of the capillaries, altered absorption and nutrition, the relative agency of the vascular and nervous systems, good use is made of the published investigations of Virchow, Henlé, Bennett, and Wharton Jones. What is known from them is compactly and circumstantially stated.

Dr. G. still hangs on to the *terminations*, but we are disposed to cut them off altogether. Instead of saying there are seven terminations of inflammation: 1, resolution; 2, effusion of serum; 3, deposition of lymph; 4, suppuration; 5, hemorrhage; 6, softening; 7, gangrene; let these phenomena be described with all the minuteness possible, as so many manifestations of *disease.* It does not assist us to their better acquaintance to call them inflammation—and destroys the chance of standing upon a common therapeutic basis. How much better, said Bichat, "inflammation terminates by, 1, resolution; 2, repercussion; 3, suppuration, or by other diseases.

Following Dr. Gross's classification we come to—

Effusion of Serum.—Dr. G. doubts whether œdema or anasarca occur, without inflammatory action, and reasons in this manner (pp. 61, 62): "It is frequently extremely difficult to ascertain the condition of the seat of the effusion by anatomical inspection. In ascites, how often does it happen, that there is the most copious accumulation of water, caused *obviously by inflammation*, and yet, on examination after death, there is scarcely a single trace of the latter malady. The absence of redness does not prove that there was no inflammation, for the discoloration with other signs often vanish, just before death. Effusion from mechanical obstruction cannot exist without producing a state of parts *analogous* to" (*what state is then analogous to, and yet not inflammation?*) "if not really identical with inflammation. But it may be said, that the effusion may result from perverted action, from irritation or distended function, all this may be true and yet not in the least invalidate our position. Everybody knows that in inflammation there is perverted action, or deranged function with irritation or altered sensibility." Poor reasoners—like good navigators—stick to the great circles. Once more he says: "In the same manner, hydrothorax is sometimes induced by tubercles of the lungs; hydrocele by carcinoma of the testicle; hydrocephalus by heterologous growths of the brain. In all these instances, effusion of water is the result unquestionably, of inflammation lighted up in the serous covering of the respective organs by the morbid deposit acting as a foreign substance." In whatever relations the morbid deposit and the inflammation may stand to each other, we would rather regard the diathesis which has produced the solid growth to be a good and sufficient cause, proximate and remote for the dropsy. And again: "The dropsical accumulations which supervene upon scarlet fever, measles, and other eruptive diseases, can be traced in most cases directly to *phlegmasial irritation* of the serous membranes." We think this bad pathology which would be likely to eventuate in worse therapeutics. The convulsion, coma, sore throat, desquamative disease of kidney, albuminuria, and dropsy of scarlet fever, are no more the signs of local inflammation, or any such process, as the frozen ear of a rabbit illustrates, than is the scarlatinal redness of the surface due to an inflammation of the skin. We would not call a variolous pustule an inflammation of the skin, though Piorry says it is nothing but an abscess. But the definition of inflammation which really *defines*, is to be the work of the Coming Man.

"*Lymphization.*"—A term not found in any other pathological treatise, as Dr. Gross confesses, is the heading of another chapter. The effusion of fibrin is invariably of inflammatory origin, and is often the only sign of inflammation existing after death. Lymph is defined by Dr. Gross as a vital organizable substance separated from the blood by a process of secretion. It does not always exhibit the same appearance. When first exuded it is semi-liquid, but its consistence thickens, and it may become organized and transformed into tissues. An excellent description of the microscopic appearances is given (p. 64). Of the inflammatory globule of Gluge, it is said that it is not confined to inflammatory lymph. Mention is made of Rokitansky's divisions into *croupous* and *plastic*, and Paget's into *fibrinous* and *corpuscular*, and the various intermediate varieties, but no allusion is made to Virchow's admirable researches on the nature and properties of fibrin, contained in various papers published since 1845. An omission somewhat remarkable in this connection, inasmuch as this subject has been for some time regarded as the specialty of the Würzburg professor.

"The chemical composition of lymph proves it to be similar to the buffy coat of the blood. It is effused under a considerable variety of *forms dependent upon the shape of the part which supplies it.*" This is a variation of form which is not of the slightest consequence. Concerning the rapidity of the formation of the plastic exudation, Dr. G. says it may form within an hour and to a considerable amount in four hours, and a case is given in illustration. Lymph tends to become organized, and becomes supplied with vessels either by the vessels of the *natural* tissues shooting into it, or spontaneously by powers residing within itself.

This process is traced up, to the development of fibrous tissue, with the aid of figures of cells and fibres, after Bennett.

"Plastic lymph organized, forms the basis of all the analogous tissues and the bond of union of divided parts. It may become the seat of inflammation both acute and chronic, pour out serum, lymph, pus, and even blood; and undergo the same transformations precisely as the natural textures. It is, likewise, the source of what is termed induration, and probably, also, in a modified form, of scirrhus and tubercle." These statements are like many other wholesale statements. They contain a great deal of verbal outside fact with a little inner falsity—just enough to spoil them and make them dangerous.

"The *analogous* tissues, formed out of the plastic element of the blood, are nearly as numerous as the *natural* tissues; thus, cellular, serous, mucous, cutaneous, vascular, adipose, horny, epidemic, fibrous, fibro-cartilaginous, cartilaginous, osseous.

"Coagulating lymph performs a conspicuous part in the reunion of divided parts. Without its agency, ulcers would not heal, and fractured limbs would dangle about "in wild uncertainty." By this is produced union by *adhesive inflammation.* What should we do without it? It is to be hoped that we are all in a comfortable state of inflammation. If so, we are as well as could be expected.

It is our belief that the term *adhesive inflammation* does not express a fact.

Suppuration.—"This is the third mode by which inflammation *relieves* itself. Pus is never deposited where there is an entire absence of inflammation. A cold abscess is the result of inflammatory action quite as much as a phlegmonous boil is. Pus may be formed without a solution of continuity. It is found much more readily and abundantly in organs which contain the largest amount of cellular substance."

This is all very well, but hardly serves as a fit introduction for an article on suppuration, which is intended to be up flush with the times, and so placed as to reflect the light which Vogel and Wedl have shed on this matter. What follows is much better. The consideration of abscesses, and especially the paragraphs which treat of the nature, varieties, and tests of pus, leave hardly anything to be said. This chapter resembles some others in being extremely unequal in style and scientific method.

Chap. V. *Hemorrhage.*—There can be no doubt that this chapter is entirely out of place in occupying a position between suppuration and softening, but we defer the suggestions on classification which we wish to make to another place. After noticing the uncertainty of our opinions on this subject, Dr. Gross remarks that, formerly, the idea prevailed that all sanguineous effusions depended upon rupture of bloodvessels; and adds, nor is this notion yet eradicated from the minds of some. It is not to be denied that most of the good books recently published give evidence that such an opinion is by no means entirely eradicated from the minds of the best pathologists. Our author has no faith in exhalants, and devotes to these mythical structures a paragraph or two. But he believes that the capillaries, being in a state of debility and relaxation, have their pores rendered unnaturally patulous, and thus allow the blood to have a more ready egress. *Relaxation* and *Pores.*—"It is precisely where meaning fails that a word comes in most opportunely." This process takes place within the limits of health (it is gratifying to know that there is something that can take place within the limits of health), as in the uterus where it constitutes the *menses.* The other subjects treated of in this chapter, are the liability of different structures to hemorrhage, the causes, the effect of inheritance upon it, vicarious hemorrhage, and the classes into which hemorrhage may be divided. Under the head of changes in the effused blood, it is said that the blood may be rejected, absorbed, may remain and become organized, or may act as a foreign substance and produce fatal inflammation, and, finally, may undergo various changes in colour and consistence. This is an interesting subject, and entitled to longer consideration. That effused blood ever becomes organized may reasonably be doubted.

Softening.—"One of the most *singular* effects of inflammation. The term is synonymous with that of *mollescence*(!), so much in vogue among the French pathologists. All parts are not equally subject to it. The particular anatomical element in which the changes are most marked is the interstitial cellular. Cadaveric softening may induce mistakes. Its differential characteristics are not, however, given in this place. There is a species of softening in the nervous centres dependent upon closure of the arteries. This interruption of the circulation, however, interrupts nutrition; but it is not by any means clear that 'the changes which the organ experiences are not of an inflammatory character.' The bloodvessels in many cases seem to have entirely disappeared, whilst in others they are so weak as to be incapable of withstanding the slightest pressure or receiving the finest injection. There can be no such thing as dry softening."

Softening of the heart is well described. It may co-exist with phthisis, pleurisy, typhoid fever, or take place as an independent affection. The microscopic appearances are not given by Dr. G. The subject (softening) is one of very great interest, and deserves treatment at length, being, perhaps, the most common and widely distributed of all organic lesions.

The experiments of Hamont and Levret upon the blood in malignant pustules are spoken of. It may be mentioned, in this connection, that different forms of carbuncle and furuncular diseases with ecthyma have prevailed to an increased extent in some of the large cities of this country during the last two years. And it has been pretty well established, that Dr. Locock's opinion concerning their contagiousness is founded on fact.

Gangrene from ergotism is treated at some length. Of the modus operandi of this agency we are ignorant. It probably affects first the blood, and then "the capillaries, causing inflammation in them followed by gangrene—the nervous system is, no doubt, also seriously involved; all that is contended for, is, that these are the parts which receive the primary impression whatever that may be." The scepticism which calls this agency in question is very reasonable.

Ulceration may be defined to be "the molecular death of a part." "Of the intimate nature of this lesion nothing is known, with any certainty, beyond the fact that it is essentially connected with inflammation." "The cutaneous, mucous, and cellular tissues are much more frequently affected than all the rest put together. This is well exemplified in the numerous *blotches* which so often cover the body, and in the erosions which are so frequently noticed in the bowels, mouth, throat, vagina, and larynx. The liability to this affection varies very greatly even in parts of the same structure; thus, 'for one erosion of the stomach we find at least a thousand in the ileum.' "

"Ulceration always manifests a tendency to extend towards the nearest surface." The great *cause* of ulceration is inflammation conjoined with pressure. The caries of bones produced by the pressure of an aneurism "disproves the idea formerly so current that ulceration can never happen without the formation of pus."

What is the nature of the concomitant inflammation? The assumption is, that it is *specific*, that it is modified by circumstances, local or general, or both combined, which the pathologists cannot appreciate.

The subject of ulcers, in the second part, is excellently treated. But we think that Dr. G. seems to consider a collection of processes, or a compound one, as a single and simple one.

Ulceration may be a salutary process, a means employed by nature to rid the animal economy of extraneous materials, collections of purulent fluids, bullets, and tubercles. "In old drunkards it seems to be designed to relieve the system of hurtful fluids, by establishing extensive sores on the legs, attended with a perpetual *flow* of irritating matter. Thus we see that ulceration, although apparently a very unpleasant, is, in many instances, a most fortunate event, and one for which the practitioner often anxiously looks." This chapter, though containing many good things, is very imperfect.

Granulation.—"This process is one of the grand operations employed by nature for the cure of wounds and the filling up of ulcers. A granulation is a vascular body, consisting at first essentially of coagulating lymph. In this an arterial and a venous branch—a *small nerve and an absorbent*, probably—are developed. It is thus an absorbing as well as secreting body, and performs the triple office of pouring out lymph, secreting pus, and absorbing such substances as are brought in contact with it. *The concomitant inflammation appears to be of a mixed character, as it is attended with the simultaneous effusion of lymph and purulent matter.*" We are getting befogged. This Proteus appears in more characters, on the same occasion, than the infant phenomenon—one kind effuses lymph and another pus. We had hoped that granulation would heal the old sore; we look hopefully at the next chapter.

Chap. X. *Cicatrization.*—"It is the finishing stroke, if the expression be allowable, of granulation—the labour necessary to polish the surface of the sore, to contract its diameter, and to bring it as nearly as possible to a level with the surrounding structures"—and it is expected to be up to the scientific level of the times.

"This process is not limited to the skin. The first step in the process of healing is the subsidence of the inflammation. The granulations contract and coalesce, the surface becomes smooth, the centre being depressed or elevated. The first evidence of real cicatrization is a thin pedicle along the breach where it unites with the old skin by an interchange of tissue, of vessels and nerves; and after the new organized deposit becomes thicker, and extends towards the centre by successive experipheral additions of new material."

Dr. Gross is convinced that ulcers and wounds never heal from the centre; that the process described is the only way by which healing can be accomplished, with the exception of large wounds, which have left little islets of sound skin.

"Are the original textures in the formation of cicatrices always regenerated? Cartilages and muscles are said to be the only *parts* not susceptible of reproduction. But even this is extremely doubtful. At all events, in most instances the reproduction is imperfect. There are no sebaceous follicles, and no hairs on new skin. Cicatrices are liable to inflammation, contraction, hypertrophy, and malignant degeneration."

Induration.—Increase of consistence may arise from the deposition of a new product, from a deficiency of the natural secretion, or the transformation of the elemental tissues of the organ affected. This excludes all the heterologous formations. "The causes are referable for the most part to inflammation *followed by* an effusion of lymph. In the lungs there is frequently, in addition to this, more or less blood poured out, which, combining with the natural structures, gives them a red colour. It is thus that *red hepatization* is established." "That induration is susceptible of being cured, daily observation abundantly testifies." No allusion is made to more than one kind of red hepatization, nor to any other, of Virchow's remarkable discoveries, in this direction. There is a pneumonia with granulations and a pneumonia without granulations.

Chap. XII. *Hypertrophy.*—The title of this chapter is provokingly suggestive of Mr. Paget's elegant lectures; but the merits of the chapter lie chiefly in the postscript—suggestive of quite another kind of literature.

Of the causes of hypertrophy some are general, others of a local character; of the former, very little can be said to be known. The local causes are chronic inflammation, mechanical obstruction, inordinate exercise.

Hypertrophy essentially consists in an augmentation of the nutritive function. The elementary particles are increased in number, or augmented in size. In that variety which results from chronic irritation it is not unlikely that there is often superadded to the alteration just mentioned a deposit of new substance in the spaces of the connecting cellular tissue, leading thus to a real change of structure.

This subject is very defectively treated, both under the head of General Pathology and in the detailed application to special organs and systems; for example, in speaking of hypertrophy of the uterus, all that we find are the following sentences: "Hypertrophy of the uterus, as a result of healthy nutrition, is very rare. The affection is usually most conspicuous in association with fibrous tumours, in which it is sometimes truly enormous. Thus, in a specimen in my possession the walls of the organ are nearly two inches in thickness, and of a firm, dense consistence, grating under the knife. Its cavity is of extraordinary size, and several small tumors are seen projecting from its outer surface. The hypertrophy is sometimes confined to the lips of the uterus, which, especially the anterior, become thick, dense, and stumpy."

We might reasonably expect, in this connection, a description of the coarse as well as of the microscopic appearances of this organ in the pregnant state.

Chap. XIII. *Atrophy.*—This lesion depends upon the imperfect exercise of the nutritive function. "General atrophy, commonly called marasmus, emaciation, or consumption, frequently arises from organic disease of the lungs, heart, and stomach, and from morbid enlargement of the mesenteric ganglions."

All animals have a period of growth, maturation, and decay. In senile atrophy the solids waste, and the fluids are changed in character. "The jelly which exists in such great abundance in young persons totally disappears in decrepitude, its place being usurped by albumen and fibrin."

The causes of local atrophy may be cessation of the function of the organ, diminution of the nervous influence, deficient supply of blood, and inflammatory irritation. Under the last head our author says: "The irritation excited by the presence of biliary concretions in the gall-bladder is sometimes followed by the complete wasting of that organ. Hepatitis often gives rise to atrophy of the parenchymatous structure of the liver; and orchitis, especially when supervening on mumps, is not unfrequently succeeded by impotence. How the lesion is produced in these cases it is not easy to determine. It is probable that the chief fault is in the *arterial capillaries,* which cease to perform their accustomed functions, and thus *allow the absorbents* to carry off more than the usual amount of organic matter."

Atrophy of the muscles, brain, uterus and mamma is well treated in each of the chapters of the special pathology devoted to these organs.

We make no apology for recalling to the minds of our readers the following extract from the writings of one of the most gifted men at present adorning our literature. When speaking of general atrophy he says—

> "It could not be without interest to watch the changes of the body as life naturally ebbs—changes by which all is undone that the formative force in development achieved; by which all that was gathered from the inorganic world, impressed with life and fashioned to organic form, is restored to the masses of dead matter; to trace how life gives back to death the elements on which it had subsisted; the progress of that decay through which as by a common path, the brutes pass to their annihilation, and man to immortality. Without a knowledge of these things our science of life is very partial, very incomplete; and the study of them would not lack that peculiar interest which appertains to inquiries into final causes; for all the changes of natural decay or degeneration in living beings indicate this design, that, being gradual approximations to the inorganic state of matter, they lead to conditions in which the elements of the body, instead of being on a sudden and with violence dispersed, may be collected into those lower combinations in which they may best rejoin the inorganic world; they are such that each creature may be said to die through that series of changes which may best fit it, after death, to discharge its share in the economy of the world, either by supplying nutriment to other organisms, or by taking its right part in the adjustment of the balance held between the organic and the inorganic masses.
>
> "Nor would the student of the design of these degenerations do well to omit all thought of their adaptation, in our own case, to the highest purposes of our existence. When, in the progress of "the calm decay" of age, the outward

senses, and all the faculties to which they minister, grow dim and faint, it may be on purpose that the spirit may be invigorate and undisturbed in the contemplation of the brightening future; that, with daily renewed strength, it may free itself from the encumbrance of all sensuous things, or may retain only those fragments of thought or intellectual knowledge which, though gathered upon earth, yet bear the marks of truth, and being truth, may mingle with the truth from heaven, and form part of those things in which spirits of infinite purity and knowledge may be exercised."

Chapter XIV. treats of Fistules, and is very much out of place between Atrophy and Transformations.

Chapter XV., Transformations. "The human body is incessantly undergoing changes by which the nutrition of its elementary constituents is modified until they are at length converted into totally different structures."(!)

The number of transformations is very small, and may be stated as follows: 1, cellular; 2, mucous; 3, cutaneous; 4, fibrous; 5, cartilaginous; 6, osseous; 7, adipose. Passing over the first four we come to the cartilaginous variety: it usually appears in the form of thin plates or nodules. The subserous cellular seems to be the texture the most liable to it. It occurs in the fibrous envelop of the spleen, in the placenta, the gall-bladder, cysts, adventitious membranes, &c. The new substance cuts precisely like a piece of costal cartilage, and passes, by insensible gradations, into the circumjacent cellular tissue, which is generally unnaturally thick and indurated. It is in reality devoid of all the elements of cartilage.

The most common transformation by far is the osseous. The new substance, which often bears but a faint resemblance to natural bone, is seen under three forms, the lamellated, tuberoid, and spicular; but in the majority of cases this so called osseous transformation does not present the usual uniform characters of true bone; it is rather a calcareous degeneration or a deposit of chalky particles, with an absence of the natural elements of bone. *Accidental ossification* is frequently witnessed in old age—the arteries, costal and laryngeal cartilages are thus affected. In other cases it is directly chargeable to inflammation.

"But the most remarkable transformation is the adipose, in which the tissues undergo a real fatty degeneration. In the majority of cases it is a true replacement of tissue by oil. By some the alteration is supposed to consist essentially in the superaddition of fatty matter to the existing tissues, whilst others consider it as the result of a true transformation." But no one, it is fair to suppose, who has read Quain and Robin, confounds these two essentially different processes.

How is it brought about? "In the human subject it sometimes seems to depend upon the want of exercise of the affected part. But are these effects really attributable to repose. Would it not be more philosophical to conclude that something was due to the want of nervous influence, and to the altered state of the circulation thence arising. Be this as it may, I feel disposed to think that the transformation in question is uniformly the result of a *low and imperceptible grade of inflammatory irritation.*" This last sentence is not the only unsatisfactory part of this paragraph.

Under the head of "Pneumatoses, or Collections of Aeriform Fluids," is included the general consideration of pneumo-thorax, tympanitis, physometra, pneumo-pericardium, pneumatocele, emphysema, &c.

The causes are external injury, chemical decomposition, and true secretion.

The next chapter introduces us to the general subject of *Tumours*, a word which does not occur in the index of Dr. Gross's work, and is really an objectionable term; but its use may conveniently serve a purpose. Our author does not approach the subject as do those who have what might be called radical notions on the subject of new formation. He does not build up his classification on a foundation of the *nature,* nor yet on any other good basis. It is both faulty and eccentric.

Chap. XVII. *Polypes.*—We object that this word cannot properly stand for a class, as it relates merely to a matter of form, and may embrace every variety of tissue, homologous and heterologous. Dr. G. confesses that it is not very appropriate. After considering briefly the situation, number, size, and form, the author speaks of their structure. "In this regard polypes may be divided into four species, vesicular, fibrous, vascular, and granular. As to situation, it may be said in general terms, that the first variety occurs most frequently in the nose; the second in the uterus; the third in the rectum, ear, and vagina; and the last in the larynx and urinary bladder. These may all undergo the various transformations. *The fibrous is most liable to become carcinomatous.*" Is such a transformation possible under any circumstances? We do not believe it, if it is intended to convey the idea that *fibrous tissue* ever becomes *carcinomatous tissue.*

In regard to their origin polypes cannot be viewed, strictly speaking, in the light of new formations, but rather as the result of a species of hypertrophy of the mucous membrane. The development of the granular from mucous follicles is traced and compared to the formation of a cyst from the closure of a sebaceous follicle. All these varieties are covered by a mucous investment continuous with that of the canal, from which they have sprung. They possess arteries and veins. No nerves or absorbents have been detected in these excrescences, though they undoubtedly exist there.

Hydatids.—Dr. Gross divides them into 5 genera; 1, the cysticercus; 2, the polycephalus; 3, the diceras; 4, the echinococcus; and 5, the acephalocysts; they all consist of a thin pellucid vesicle, varying in size, which is filled with a clear watery fluid, and surrounded by a dense fibrous capsule, upon which they depend for their nourishment and support.

These are well described by words and figures. The origin of hydatids is involved in doubt. Recent researches tend to show that they are the ova of worms, probably of the tænia, which reach a certain stage of development, and then become encysted. The embryos of tænia have been seen perforating the intestinal walls, in order to reach the parenchymatous structures in which they were destined to become imbedded. Whilst the formative process is going on, the parasite takes care to isolate itself by means of a capsule. This capsule formed out of plastic lymph, is furnished with vessels, nerves, and absorbents; these are derived either from the surrounding textures, or are of spontaneous formation.

How are hydatids nourished? They are isolated by a capsule, which is lined by a thin, pulpy, fragile lamella, which Dr. Hodgkin supposed to be an excrementitious secretion from the hydatid, but which Dr. Gross believes may be an important structure designed to nourish the parasite. Some hydatids are short lived, and some last for years. They may die of inflammation terminating in suppurative gangrene.

This chapter, although one of the most thorough and complete expositions of the actual state of science to be found in the book, contains no notice of Robin's remarkable explorations among entozoa.

' Serous cysts are often confounded with hydatids, but may be readily distinguished by the fact of their being all intimately connected with the parent sac, by the circumstance of vessels passing from one to the other, and by their not containing any parasitic formations.—[*Vide passim,* Robin and Paget, Simon, Johnson, and Budd.]

Chapter XX. *Heterologous Formations.*—This chapter, divided into six sections, introduces the subject of heterologous formations. This is by far the best part of the work we have as yet passed in review. Much of it is admirable in style, and it is well illustrated by wood-cuts, old and new. Most of the latter made from drawings by Dr. Da Costa, whose valuable assistance has received from Dr. Gross the credit to which it was believed to be entitled.

There are, however, in the following sections, many opinions and statements which may fairly enough be questioned. But, in accordance with the plan already pursued to this point, we prefer that our author should announce his ideas and fortify them in his own way.

By the term heterologous are understood certain morbid products of a solid or semi-concrete consistence which have no resemblance whatever, or, at most, only a very remote one, to the natural, normal, or pre-existing tissues of the body. The number of these products is, probably, not more than six, viz., tubercular, scirrhous, encephaloid, colloid, melanotic, and epithelial. All the heterologous formations have one common property, they are all malignant, and tubercle is unquestionably the most malignant of all. Their origin is, probably, of an inflammatory nature, attended with an altered condition of the blood and an aberration of the nutritious function.

Was there ever greater need of an Ashburton to settle boundary lines?

Section I. *Tubercle.*—In this section we find many well-arranged and useful facts. As in other parts of the work, the external qualities of the products of disease, including those ascertained by the microscope, are presented with marked fidelity and minuteness.

Tubercle is limited by Dr. Gross in its application to denote "a small solid tumour of an irregularly spherical figure, more or less opaque, of a pale-yellowish colour, seldom exceeding the volume of a pea, and composed of a peculiar substance, which, sooner or later, undergoes a process of decomposition." Passing over what is said concerning the *situation,* period of life, its occurrence in the inferior animals, chemical constitution, we stop at *varieties of form.* Here we learn that tubercular matter presents itself under four distinct varieties, the miliary, encysted, infiltrated, and lamellated, besides that which is known as gray granulations, which Dr. G. regards as a variety of the ordinary gray tubercle.

In regard to the formation, it is said that all tubercular matter, whatever be its form, site, or extent, is, in the first instance, of a liquid nature, becoming solid by the absorption of the serosity which is poured out with it. It grows by the superaddition of one particle to another. The effusion is always effected *under the influence of inflammatory irritation,* preceded by a peculiar dyscrasia. The doctrine of the inflammatory origin is countenanced, if not actually established, by the following circumstances, says our author:—

1. By chemical analysis.
2. Tubercular matter bears a very great resemblance to spoiled, degraded, or cacoplastic lymph, which is an acknowledged product of inflammation.
3. *The deposit is often excited by cold, especially when conjoined with moisture and by bad food; by the former are produced internal congestions, by the latter an impoverished blood.*
4. In many cases the disease is attended or preceded by hyperæmia or active congestion.
5. Well characterized tubercles have been produced on the lower animals experimentally, by mechanical irritation.

6. *There is no appreciable deposit or effusion in any of the shut sacs, cells, or cavities of the body, which is not, strictly speaking, the result of inflammatory action, though this may be too slight to attract attention or to be attended by the ordinary phenomena of that process.*

This crowns the climax and completes the circle at one jump. Thus life and growth are inflammatory actions, and we ourselves are only compound inflammatory globules of considerable size.

Are tubercles ever organized? In answering this question, it is apparent that Dr. G. takes that to be tubercle which Robin, Wedl, Lebert, and others have shown not to be tuberculous. The little masses once described as tubercles comprehend many morphological elements. Besides cells with distinct nuclei, and nuclei mixed with molecules, and granular corpuscles, and the protein bodies with flocculent edges, there may be various other heterologous or homologous formations, as cancer, &c.; so that a tuberculous mass may be like any other mass of tissues—a cancerous tumour even—made up of various elements. In tubercle as in other structures, there may be various pathological changes going on—degeneration, suppuration, exudation. But we think it is not to be inferred from this that tuberculous matter is organizable. To say that it has an organized blastema for its base is a different thing, and more in accordance with the results obtained by the most minute investigations.

We refer the reader for Dr. Gross's able presentation of the other side of this double-headed question to pp. 158, 159 of the *Elements of Pathological Anatomy*. This section manifests throughout a conscientious use of most of the well-established facts, and a praiseworthy fairness in confessing to uncertainties in matters of doubtful knowledge.

The paragraphs devoted to microscopical characters are full and compact, but we have not space for further extracts, and pass on.

Section II. *Melanosis.*—This subject introduces the subject of colouring matters, whose history is yet to be written. For this material has been furnished by Vogel, Virchow, Robin, Verdeil, Bence Jones, and Addison. From our own observations we are led to coincide with those who believe that all the pigments are but slight modifications of the one colouring matter of the blood, more or less oxygenized, and having slightly different molecular arrangements, whence they reflect light differently. They all have many common characteristics, the most remarkable of which is invulnerability; they are hard subjects, and resist assaults. The mortality which is supposed to depend upon melanosis we should no more refer to the deposit of *mélanine* in the tissues than we should refer the deaths from Addison's disease to the bronzing of the skin.

But in turning to our author we find him describing melanotic tumours as tuberoid, lamellated, dot-like, infiltrated, ramiform, and liquid; and we add, as an appendix, that it may be found in any form into which blastema or stroma may be arranged. The subject is treated by Dr. Gross at considerable length, and the section appropriated to it is one of the most interesting in the book.

Sections III., IV. and V. treat respectively of scirrhus, encephaloid and colloid. The imperfect definition which stands at the beginning of Section III. is an index of the false point of view from which Dr. G. regards all the new formations. It is from the external and anatomical side that the subject is viewed. Thus it is said: "Scirrhus may be defined to be a hard, crisp, opaque substance, of a light grayish colour, with dull, yellowish, fibrous intersections organized, liable to lancinating pain, occurring for the most part after the middle period of life, and passing sooner or later into ulceration."

Scirrhus may occur as a solitary tumour, in disseminated masses, as an infiltration, or as a lamella. After the general consideration of these forms, follows a good description of the appearances on section.

The characteristic cancer-juice, on which Lebert, Nélaton, and others insist so much as one of the first-sight, reliable signs, is dropped with two lines thus—"a creamy-looking fluid is occasionally incorporated with the heteroclite mass, and constitutes the most decided evidence of its carcinomatous nature." The student who reads this fact for the first time in this book—and we suppose that it is for that class of readers the book is chiefly designed—will be at a loss how to turn the information to any account as an aid to a differential diagnosis.

Scirrhous tumours present considerable variations of structure, dependent upon the quantity of adventitious matter, its vascularity, its mode of aggregation, and the pressure which is exerted upon surrounding parts; whence names indicative of peculiar appearance have been assigned—such as mammary, pancreatic, lardaceous, and reticular.

Under the head of organization, a very minute and complete description of the microscopic appearances is given, which we have not space to transfer.

As a summary of several remarks our author says: "It may be concluded first, that the deposit of scirrhus is preceded by *inflammation;* secondly, that it has a great predilection for the glandular viscera; thirdly, that it rarely occurs under the age of forty; fourthly, that the matter of which it consists, when first deposited, *strongly resembles that of tubercle;* and lastly, that this matter is deposited always *into the cellular tissue of our organs* in such a manner as to transform their proper parenchymatous structure."

The scirrhous matter is liable to softening; this change may begin at any part of the mass.

A scirrhous ulcer is exceedingly well described by Dr. Gross, p. 176.

Finally, scirrhus, after having attained a certain age and bulk, is occasionally assailed by destructive inflammation, followed by sloughing of the whole of the heterologous matter.

The section in which encephaloid is treated, bears marks of an intermittent development. Scattered throughout it, and in the midst of a style every way scientific and appropriate, occur occasionally paragraphs which, from the absence of the new terms, the phraseology indicative of the late discoveries, show an origin of a much earlier date than the context. Thus, "intimately allied to scirrhus, in its mode of origin, yet differing from it widely in many of its essential features, is encephaloid * * * * *as the term indicates, this morbid growth bears a great resemblance to the cerebral tissue, not only in appearance but also in chemical composition.*" That is what Dr. Gross calls a great resemblance, and illustrates like a steel cut, what we mean by the outside way of looking at pathological anatomy. It is to be hoped that the students will not confound *resembling* with *analogous;* if they should, they would have to look long, before finding any structures that could fairly be called heterologous.

We think the space in which the forms, as tuberoid and stratiform, are described, should have been given to something more important. The forms are accidental, but, presented as we find them in this section, might be supposed to be a good basis for classification.

It may be assumed that encephaloid, when first found out, is always fluid. Its structure is not uniform, and its consistence is so various that it has given rise to various designations. The well known microscopic appearances are clearly described. For them and what is said on the chemical constitution and etiology of this form of cancer, the reader is referred to pages 180–184.

The ulcerated mass sometimes sloughs completely away, as if dissected out, but is soon followed by a reproduction of the disease. It might be added that such growths are not likely to be injured by explorations with a needle, in the hands of a scientific man, nor yet radically cured by applications of chloride of zinc and sanguinaria.

Section V. *Colloid.*—Known also as gelatiniform cancer, alveolar cancer, and gum cancer. "By some," says Dr. G., "this heterologous formation is regarded merely as a modification of the carcinomatous products already described." The same might be said of tubercle, scirrhous and encephaloid. It might have been added that some observers do not regard colloid as carcinomatous at all. We agree with our author, in thinking it possessed of sufficiently distinctive features to entitle it to separate consideration.

The description given of the structure is excellent, but we can give only a general idea of it.

Colloid is composed of two distinct elements, a containing and a contained part—a stroma of fibrous tissue, forming cells of different sizes and shapes, freely communicating with each other, whence a colloid tumour bears some resemblance to a sponge. The other substance is a straw-coloured jelly, unorganizable.

How this disease originates, or what its causes are, we are entirely ignorant. Its progress is usually slow. It manifests no disposition to ulcerate, is never the seat of hemorrhage, or of much pain; the general health usually holds out well, and the countenance rarely acquires that sallow, cadaverous hue, so common in ordinary carcinoma.

Section VI. *Epithelial Cancer.*—This subject has received special attention from Dr. Da Costa, and plates representing a papilla and encysted cells are taken from drawings by this microscopist. The section embraces a general view of all that is known on the subject, although no special reference is made to Lebert or Bennett.

This brings us to the close of the first part of Dr. Gross's work, that which treats of general pathological anatomy. Its faults or errors of doctrine we conceive to be those of its class. It is too much anatomical, and too little pathological. We believe that Dr. Gross is as much convinced as we are, that there cannot be an exposition of morbid anatomy of any value, without pathology, but he always puts the anatomy first, and that disposition has controlled his figures of speech and illustrations, but especially his classification, and has compelled him, or permitted him, to leave the greatest things unsaid, or but faintly indicated. The great facts of diathesis, dyscrasiæ, and all that contributes to make idiosyncrasy, are overshadowed by protuberant tumours, from the size of a billiard ball to a dinner plate, and resembling everything that ever has been served up on a dinner plate. We have brought in, by three or four pages, one after the other, peas, Lima beans, currant jelly, boiled egg, moist cheese, arrowroot, custard, potato, turnip, orange, mustard, calf's liver, and an adult head. These are here enumerated only for the purpose of illustrating our meaning. They are given by the author, to describe qualities, which, we think, are not of much consequence, and may be present or absent, without changing the character of the production, being indifferently applicable to all sorts of growths, heterologous and homologous. But it must be acknowledged that it is his aim to give his pupils clear ideas of these external properties, such as first strike the eye, and are noted by the quick diagnostician and prompt clinical lecturer, rather than the essential qualities, which the medical philosopher should look for. We have, therefore, no doubt that the students, whose privilege it is to listen to Dr. G., receive from him well-defined principles for the diagnosis of external disease, and the coarser specimens of internal disease. But there is much more than this that comes within the domain of pathological anatomy.

In the second part, treating of the application of general principles to special organs, we find nothing challenging criticism except the repetition of the doctrines to which we have already called attention; but we do find much that indicates a vast erudition, and patient, conscientious labour. Its collection of facts is so great that it must ever be an extremely convenient *vade mecum* on the office table—with other books, we should add parenthetically, for it requires those that are complementary by its side.

Having now fairly presented Dr. Gross's doctrines according to his own classification and in his own style and method, we beg our readers to look, for the sake of contrast, at the ideas which have been generally adopted by the members of what may be called the French biological school, and are given here as an answer to the inquiry how anatomy should be studied and taught.

The idea of life, properly speaking, does not belong to the organs and tissues as such, but to certain elements which by their reunion make tissues. These elements may be considered (a) in relation to their form or size; (b) in relation to dynamic attributes. They have, 1, physico-chemical properties, and 2, vital properties.

There are, I. Constituent Elements: II. Elements of Production.

I. Constituent elements are divisible into (α) amorphous elements, (β) globules, cells, nuclei vesicles, (γ) fibres, (δ) tubes, canals, (ε) amorphous substances mixed with corpuscles, cells and cavities.

II. Elements of Production may be (α) Homœomorphic, (β) Heteromorphic productions, as globules of exudation, globules of inflammation, of pus, cancerous elements, corpuscles of tubercle.

All compound tissues consist of, 1st, a fundamental form or species of anatomical element which makes up the mass of the tissue, and whose properties give the specific character to the tissue, and, 2d, of one or more species of elements which do not enter into the constitution of the tissue except as *accessory*, and whose properties only modify the tissue in a secondary manner: *ex. gr.* striated fibres are the essential anatomical element of muscular tissue; the accessory elements are areolar or laminated fibres, fat vesicles between the fibres, capillaries and nervous tubes. This law is of great consequence and should especially be borne in mind in the study of morbid products: thus—

Homœomorphic tumours exhibit this peculiarity; an accessory element which nominally exists in small quantity becomes enormously increased relatively and finally predominates over the fundamental tissue and really becomes the fundamental tissue. Most of the amorphous substances, the homogeneous intercellular substances which in the normal condition are quite secondary or accessory, may become greatly multiplied, as is seen in epithelial, tubercular, and cancerous formations.

The Heteromorphous tumours present many examples of the normal elements becoming accessory, the nature of the production being unchanged. Globules of pus are often accessory elements of cancerous and epithelial tumours. Pavement epithelium is also *accessory* and secondary in cancerous tumours. The granular globules of exudation are secondary elements of a large number of tumours.

By Homœomorphic elements are understood morbid fluids or tissues constituted by anatomical elements of the same nature as those existing in normal tissues and fluids.

Heteromorphic elements are new productions, solid or fluid, differing in nature from those normally existing in the body; their presence is, therefore, a pathological sign. Examples: pus, granules of tubercle and cancer cells, and, according to Robin, one or two others not yet well known.

These never have been observed to be the production of other existing normal elements, by metamorphosis or as a consequence of simple development; they are always the results of processes of *new production* at the expense of a blastema found under abnormal conditions: thus, Products of new generation —neoplastic growths—are made up essentially of, 1st, an abnormal increase—hypergenesis—of elements which belong to the economy, but are normally secondary to some tissue: 2d, the production of elements which are essentially dissimilar from those which exist in the normal state.

Blastema is a generic word used to designate the basis of all anatomical elements, normal or morbid. Pathologically considered, there are as many different blastemata as there are causes of effusion. Whenever exudation of lymph occurs its nature depends upon the cause, local or general, which excited it.

By the word tumour is meant a persistent collection of morbid productions, characterized by a tumefaction which is limited, but having no other fixed physical peculiarities. This definition embraces every variety of morbid tissue and concretion, as well as all collections of fluid circumscribed by new epigeneses, however these latter may have been produced, whether at the expense of the normal structure and fluids, or by means of heteromorphic elements.

The first observation to be made in relation to these growths or tumours is, that they are of a complex nature—of *fundamental* and *accessory* elements. These are relative elements, which are always shifting ground—sometimes an accessory element becoming, under other circumstances, fundamental. Amorphous elements, however, remain accessory. These last are of great importance in relation to the differential characteristics of growths, for according as these amorphous elements exist in greater or less abundance, do we find the external appearances of the growth vary without essential change in the elementary structure.

Much embarrassment has been created in the course of earlier investigations with the microscope, from the fact that the new growths were not considered in their proper relation with normal elements, and especially from misconception as to the modifications to which the epithelia are subject, as regards their number, size, shape.

The whole subject of morbid growths—deposits or exudation—in respect to their essential characters, their benignity or malignity, has been much simplified by the new methods of investigation, which now include, besides a measurement and description of each of the substances in the field of the microscope, and their quantitative chemical analyses, the study of the nutrition, growth, and reproduction.

Still another advance has been made by the discovery that behind the particular growth which is the subject of observation, there is an inexhaustible fountain of materials assimilable to it, and a constant *vis a tergo* which keeps the current towards it in active motion; "new fresh blood is constantly circulating." Practically, then, tumours cannot be made to absorb. This rule has but few exceptions. The same law which is an obstacle to their absorption is the cause of their reproduction after their removal. That means for effecting a change of the dyscrasia, for a constantly increasing number of morbid products are in hand, is a matter of fact. In that direction the science of Therapeutics makes progress.

"It is a law binding only on devils and phantoms that they must go out the same way they stole in." Once these sprouting tendrils get in, the death struggle begins—one or the other must be cut off—there is no remedy but ablation, and that to be early enough.

On the basis of the preceding facts and dogmas a classification of morbid productions has been erected the most complete that can be found in medical literature; but before we proceed to quote it let us look, by way of comparison, at some others. One of the best in design, though at this time quite limited and incomplete, is Bichat's arrangement. He begins with alterations of the fluids; then follows a brief chapter on inflammation; then the maladies of serous membranes in general and particular; then maladies of the mucous membranes; maladies of cellular tissue follow; and maladies of the lungs. Maladies of the glands in order: Maladies of the cutaneous surface; maladies of the muscles of organic life; maladies of the muscles of animal life; maladies of the absorbent system; maladies of the fibrous system; maladies of the synovial system; maladies of the cartilaginous system; maladies of the medullary system; maladies of the osseous system; maladies of the pilous system; maladies of the epidermic system.

The arrangement followed by Mr. Paget in his Lectures on Surgical Pathology is quite scientific, and one of the best and most convenient for use that can be found. We therefore make no apology for asking our readers to look it over again in this connection. This author very properly begins his discourses on Pathology with an exposition of the processes of nutrition and passes *seriatim* through growth, hypertrophy, atrophy, repair, inflammation, and ends this first part with local or molecular mortification, limited death.

Having finished the consideration of Inflammation, the general malady or basic disease, according to some pathologists, Mr. Paget begins anew with specific diseases, and, passing to morbid materials in the blood and tissue, comes to the second chapter, on Overgrowths or Tumours. These are either benign or malignant.

The benign are divisible into cystic and solid. The cystic, *simple, barren;* gaseous and serous cysts: *proliferous*, ovarian: *proliferous*, glandular, mammary; epidermal, dentigerous: fatty, fibro-cellular, areolar: fibrous, painful subcutaneous: fibrous polypi, fibro-calcareous; fibro-cystic: malignant fibrous, recurring fibrous; fibro-nucleated: enchondroma, cartilaginous, simple and mixed: myeloid; fibro-plastic, osseous: mammary: erectile:—*all these are innocent or benign.*

The malignant are: Scirrhus, medullary cancer, epithelial cancer, melanoid, hæmatoid, osteoid, villous, colloid, tubercles.

Dr. Gross's classification may be thus represented: Inflammation at the beginning, *fons* et *origo;* then its terminations and conditions, as effusion of serum, lymphization, suppuration, hemorrhage, softening, gangrene, ulceration, granulation, cicatrization, induration, hypertrophy, atrophy, fistules, transformations, pneumatoses, polypes, hydatids, serous cysts, heterologous formations, tubercle, melanosis, scirrhus, encephaloid, colloid, epithelial, and then special pathological anatomy. This we believe, after thoughtful looking, could not be made worse.

The completest of all we have yet seen, excepting that of Bouchut's *Thèse de Concours*, is this which follows:—

CLASS I.—HOMŒOMORPHIC TUMOURS.

ORDER I.—Solid Homœomorphic Tumours.

Genus I. Tumours formed by Constituent Tissues.

- *First Species.* Tumours formed by Laminated Areolar Tissue.
  - 1st variety. Proper fibrous tumours.
  - 2d " Colloid.
  - 3d " Fibro-cystic tumours.
  - 4th " Fibrous—Pediculated—Uterine.
  - 5th " Cheloides cicatricial.
- *Second Species.* Fibro-Plastic Growths.
- *Third Species.* Myeloplaxis—Osseous Medullary.
- *Fourth Species.* Tumours of Cytoblastions—Chalazion Gumma—Yams—Syphilitic Fungosities.
- *Fifth Species.* Myelocysts—Cerebral Cellules.
- *Sixth Species.* Dermic.
  - 1st variety. Keloides.
  - 2d " Keloid, or cicatricial vegetations.
  - 3d " Condylomita—Cauliflower excrescences.
  - 4th " Nævi—Hypertrophic.
  - 5th " Verruca Warts.
- *Seventh Species.* Adipose Tumours—Cholesteatomata—Lipomata.
- *Eighth Species.* Enchondromata.
  - 1st variety. Periosteal tumours.
  - 2d " Exostosis.
- *Ninth Species.*
  - 3d variety. Osteoid, periarticular, senile, and rheumatismal.
- *Tenth Species.* Hypertrophic, Glandular, Exdermoptoses, and Sebaceous.
- *Eleventh Species.* Condensed Glandular Tumours.
- *Twelfth Species.* Colloid Glandular Tumours.
  - 1st variety. Arterial fungous tumours, acquired—Aneurism.
  - 2 " Nævi materni—Congenital erectile tumours.
- *Thirteenth Species.*
  - 3d variety. Varicose venous erectile tumours—Epididymitic—Testicular—Thyroidal—Ovarian.
  - 4th. " Aneurism by erosion—Extravasated blood—Dissecting and osseous aneurism—Erectile tumours of liver.
- *Fourteenth Species.* Parasitic—Heterotopic.
  - 1st variety. Testicular.
  - 2d " Ovarian.
  - 3d " Cutaneous.

Genus II. Tumours formed by Products.

- 1st variety. Epitheleomata.
- 2d " Horny tumours.
- 3d " Pigmentary—Melanosis.
- 4th " Exostoses dental.
- 5th " Gouty concretions—Tophaceous.
- 6th " Calcareous tumours — Inter-glandular — Cutaneous—Salivary.
- 7th " Tumours formed by products of conception—Moles.

ORDER II.—Homœomorphic Tumours—Fluid.

Genus I. Tumours formed by Constituent Fluids.

- *First Species.* True Aneurisms.
- *Second Species.* Hæmatic Tumours—Cephalhæmatomata—Hæmatocele—Polypiform—Hæmatomata.
- *Third Species.* Gaseous Tumours—Emphysema—Pneumatoses.

Genus II. Tumours formed by Liquid Products.

- *First Species.* Glandular Cysts of many varieties.
- *Second Species.* Cysts formed in Excretory Ducts.
- *Third Species.* Cysts formed of Parenchymata, not Glandular.
- *Fourth Species.* Cysts, Synovial.
- *Fifth Species.* Cysts of Accidental Synovial Bursæ.
- *Sixth Species.* Cysts of Cellular Tissue—Congenital—Hydrocephalic.

CLASS II.—HETERO-MORPHIC TUMOURS.

ORDER I.—SOLID HETEROMORPHIC GROWTHS.

First Species. Tubercle.
Second Species. Typhus Matter.
Third Species. Thnétoblastic, or Fatal Cancer.
Fourth Species. Heterodenic—Butyroidal Sacs.
Fifth Species. Tumours resulting from Anatomical Wounds.

ORDER II.—LIQUID HETEROMORPHIC TUMOURS.

First Species. Purulent—Abscess—Anthrax—Furuncle.
Second Species. Parasitic Tumours—Cysticercus Hydatids with Echinococci—Hydatids without Echinococci.

In our summary we call disease any disorder of the forces or of the constituent parts of the body. But, absolutely, there is no health. There is always disease, with more or less of actual and prospective manifestation. There is always a disturbance from the too much or the too little, if not from empoisonment or other harmful absorption. There is no more likelihood of absolute health than of an absolute quietude of the winds, or an absolute electrical equilibrium. So long as there is variableness of temperature, so long will there be disturbances of the media, and so long disturbance of the functions of organisms. As long as the sun shines will continents upheave, and blastemata degenerate. When will the media be at rest? Not till then will the forces and the elements within the body of man be at rest.

So long as the sun chimes in with the music of his brother spheres, and the pomp of the earth revolves, and the "brightness of paradise alternates with deep-fearful night"—and the "sea foams up in broad waves," and storms roar—so long shall the body of man be sick, and his mind unstable; so long shall there be sins for repentance and sorrow for consolings. As long as aggregate cytoblasts shall be prone to disturbances, so long shall masses of men be liable to revolutions and conflicts. So long as there shall be social sins and degradations, so long shall there be maladies of individual organisms.

Thus "all revolves into the whole, and through *the* All, ring harmoniously all the heavenly influences." C. F. H.

ART. XV.—*Human Histology, in its Relations to Descriptive Anatomy, Physiology, and Pathology.* With 434 Illustrations on Wood. By E. R. PEASLEE, A. M., M. D., Prof. of Physiology and Pathology in the New York Medical College, of Anatomy in Dartmouth College, and of Surgery in the Medical School of Maine, &c. &c. Philadelphia: Blanchard & Lea, 1857. 8vo. pp. 618.

THE plan of Prof. Peaslee's book is to combine in a single volume a description of the ultimate chemical elements entering into the composition of the human body, that of the proximate principles, of the anatomical or structural elements, and of the tissues proper, together with some account of their healthy functions, and the morbid alterations to which they are subject in disease. The first part is accordingly devoted to the consideration of the chemical elements and the proximate principles; and the second part to the more purely anatomical description of the minute forms and structures demonstrable by the microscope.